

Response under 37 CFR 1.111  
Kenji OHMORI et al.

U.S. Patent Application Serial No. 09/963,674  
Attorney Docket No. 011020

**REMARKS**

Claims 1-10, 13 and 14 are pending in this application. No amendment has been made herein.

**Claims 1-10 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinichi et al. (JP2000-058312) in view of Ishihara et al. (JP 11-251131) and Ohashi et al. (EP 0,430,198A2) (Office action point no. 3).**

The rejection of claims 1-10 and 13-14 is respectfully traversed, and reconsideration of the rejection is respectfully requested.

The invention of Ishihara et al. is directed to an **RF dust core** (not a compacted magnet or a bonded magnet) obtained from a magnetic metal powder (composed of magnetic metal particles) and a thermosetting resin, and the surface of each of the magnetic metal particles is covered with an insulating film formed by the treatment of the magnetic metal powder with a phosphate-containing solution for chemical conversion treatment. Further, in Ishihara et al., the thickness of the insulating film is from 10 to 100 nm.

In general, an RF dust core is produced by molding a magnetic metal powder composed of magnetic metal particles, the surface of each of which is covered with an insulating film. The invention of Ishihara et al. is based on the finding that an RF dust core with a specific resistance of as high as  $2 \Omega\text{cm}$  or more can be obtained by appropriately control the thickness of the insulating film and the mixing ratio of the magnetic metal powder and thermosetting resin.

That is, in Ishihara et al., the thickness of the insulting film is required to be within the specific range in order to obtain an RF dust core having excellent properties.

On the other hand, the invention of Shinichi et al. is directed a **a resin bonded magnet** (including a **rare earth-based magnet**) and a composition to be used for producing the resin bonded magnet, and the invention of Ohashi et al. is direct to **a rare earth-based sintered permanent magnet**.

As apparent from the above, **the subject matter** of Ishihara et al. is **completely different** from those of Shinichi et al. and Ohashi et al. Correspondingly, **the material** of the magnetic metal powder (composed of magnetic metal particles) in Ishihara et al. is **completely different** from those in Shinichi et al. and Ohashi et al.

In Ishihara et al., there is **no** description with respect to a rare-earth element. Further, it is a common understanding of a person skilled in the art that the use of rare-earth element as a material of an RF dust core has **no** advantage in view of cost or performance. For this reason, usually, a magnetic metal powder used for producing an RF dust core contains no rare-earth element.

Therefore, Ishihara et al. cannot be taken to teach or suggest the use of a rare-earth element as a material of the magnetic metal powder.

On the other hand, as mentioned above, each of Shinichi et al. and Ohashi et al. refers to a rare earth-based magnet. Therefore, it is apparent that the magnetic metal powder regarded as apparent from these documents contains a rare-earth element.

In addition, because of this difference in the material of the magnetic metal powder, **the**

**composition of the film** (insulating film) formed on the surface of the magnetic metal particles is completely different from that of the phosphate film regarding as apparent from Shinichi et al. and Ohashi et al.

With respect to these references as well as the present invention, the film on the surface of the magnetic metal particles is formed in accordance with substantially the same mechanism in which the material present at the surface of the particle reacts with phosphoric acid to form a salt (phosphate), so that the surface of the particle is coated with the film of the phosphate.

For example, in Examples of Ishihara et al., the insulating film is formed on the surface of the particles by a method comprising:

adding 20 g of phosphoric acid, 4 g of boric acid, 4 g of magnesium oxide (MgO), EF-104 (as a surfactant) and 0.04 mol of benzotriazole (as a rust preventive) to 1 liter of water to thereby obtain a phosphate-containing solution for chemical conversion treatment;

mixing the obtained solution with a magnetic metal powder (atomized iron powder (spherical) having an average particle diameter of 70  $\mu\text{m}$ ) for a predetermined time in an appropriate vessel; and

drying the magnetic metal powder in a constant temperature chamber at 180 °C for 60 minutes (see paragraph [0014] of Ishihara et al.).

However, as mentioned above, the magnetic metal powder used in Ishihara et al. does **not** contain a rare-earth element. Therefore, in Ishihara et al., the insulating film formed on the surface of the magnetic metal particles **cannot** contain a phosphate of a rare-earth element.

In fact, in the above-mentioned case, the insulating film comprises at least iron phosphate

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and magnesium phosphate, but not a phosphate of a rare-earth element.

On the other hand, as mentioned above, in each of Shinichi et al. and Ohashi et al., the magnetic metal powders may contain a rare-earth element. Therefore, the phosphate film regarded as apparent from these documents **contains** a phosphate of a rare-earth element.

Therefore, Ishihara et al. cannot be combined with Shinichi et al. and/or Ohashi et al. to reject claims 1-10, 13 and 14.

Therefore, a magnet powder with a phosphate film having a thickness of 5 to 100 nm, which is to be used for producing a bonded magnet and compacted magnet, is **not** obvious to a person skilled in the art from Shinichi et al. even in view of Ohashi et al. and Ishihara et al.

Moreover, with respect to the rejections to Claims 9 and 10, it should be noted that in Ohashi et al., as apparent from Example 1, the metal powder is subjected to compression molding and sintering before film formation.

Applicants therefore submit that claims 1-10, 13 and 14 are novel and non-obvious over Shinichi et al., Ohashi et al. and Ishihara et al., taken separately or in combination.

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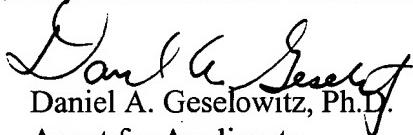
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If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants undersigned agent at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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